

Claims

- [c1] 1.A method for microscopy, comprising the following steps:
 - a)acquiring an image and identifying a region of interest of a sample within the image; and
 - b)automatically recording the entire marked sample region in three dimensions.
- [c2] 2.The method for microscopy as defined in Claim 1, wherein the user selects a plane within the sample that contains the region of interest of the sample.
- [c3] 3.The method for microscopy as defined in Claim 2, wherein selection of the region of interest of the sample is accomplished using a crosshairs that is overlaid on the image of the sample on a display.
- [c4] 4.The method for microscopy as defined in Claim 2, wherein selection of the region of interest of the sample is accomplished by delimiting the region of interest of the sample in the image of the sample displayed on a display.
- [c5] 5.The method for microscopy as defined in Claim 2, characterized by the following steps:

- a) extracting the region of interest of a sample by means of image analysis and constructing a list of specimen positions;
- b) defining a list of possible further specimen positions derived from the neighborhoods of the list of specimen positions;
- c) selecting a sub-list of the possible further specimen positions that can be imaged in parallel fashion by the microscope;
- d) traveling to a microscope position which makes possible acquisition of a scene in which all possible specimen positions of the sub-list are visible;
- e) performing a data acquisition;
- f) matching the sub-list of possible specimen positions to the acquired data, eliminating all possible specimen positions not belonging to the specimen, and storing the specimen positions belonging to the specimen;
- g) expanding the list of possible further specimen positions based on the specimen positions, found in f), belonging to the specimen;
- h) repeating steps d) through g) as long as the list of possible further specimen positions contains elements.

[c6] 6. The method for microscopy as defined in Claim 5, wherein the list of specimen positions can be depicted as XYZ coordinates with reference to a voxel grid.

- [c7] 7.The method as defined in Claim 5, wherein it comprises the further steps of
- a)generating a new sub-list of test positions on the basis of the identified specimen positions;
 - b)incorporating the sub-list into the list of all hypothetical test positions, excluding duplicate entries and positions already traveled to.
- [c8] 8.The method as defined in Claim 1, wherein the method for microscopy is used in a scanning microscope.
- [c9] 9.An arrangement for microscopy, comprising: a microscope with at least one microscope objective, a detector unit for acquiring images of a sample, a display for displaying the images of the sample acquired by the detector unit, a computer system controlling the microscope and a data acquisition process, a means for identifying the region of interest of the sample, and in the computer system a means for automatically recording the entire marked sample region in three dimensions.
- [c10] 10.The arrangement as defined in Claim 9, wherein the means for automatically recording the entire marked sample region in three dimensions is a software module.
- [c11] 11.The arrangement as defined in Claim 9, wherein the means for automatically recording the entire marked

sample region in three dimensions is embodied in the form of hardware and software.

- [c12] 12.The arrangement as defined in Claim 9, wherein the means for identifying the region of interest encompasses a crosshairs and the crosshairs being overlaid on the image of the sample on the display.
- [c13] 13.The arrangement as defined in Claim 9, wherein the means for identifying the region of interest encompasses a mouse cursor with which the region of interest of the sample can be delimited on the display.
- [c14] 14.The arrangement as defined in Claim 9, wherein the computer system encompasses means for extracting the region of interest of a sample by means of image analysis and for constructing a list of specimen positions, means for defining a list of possible further specimen positions, means for selecting a sub-list of possible further specimen positions that are imaged in parallel fashion by the microscope, means for traveling to a microscope position that makes possible acquisition of a scene in which all possible specimen positions of the sub-list are visible, and means for matching the sub-list of possible specimen positions to the acquired data, and means for eliminating all possible specimen positions not belonging to the specimen, and a memory that

stores the specimen positions belonging to the sample.

[c15] 15. The arrangement as defined in Claim 9, wherein the microscope is a scanning microscope.